# FIRE AND LIFE SAFETY EDUCATION FOR THE ELDERLY

## LEADING COMMUNITY RISK REDUCTION

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## ABSTRACT

This applied research project examined elderly fire and life safety education. The problem is that the Milwaukee Fire Department has not implemented an effective public education program to address the fire and life safety risks of the elderly population of the City of Milwaukee. The purpose of this research paper was to identify the specific fire and life safety risks to the elderly population in the City of Milwaukee and make recommendations for the development of an elderly public education program.

This research project employed the descriptive research method to answer the following questions:

1.  What are the current and future demographics of the elderly population in the City of Milwaukee?

2.  What are the fire and life safety risks of the elderly population of the City of Milwaukee?

3.  What is the perception of the elderly population regarding fire and life safety risks?

4.  What are the issues that must be addressed in creating an educational program for the elderly population?

5.  What intervention strategies can be employed to effectively address elderly fire and life safety risks?

6.  What evaluation strategies are effective in measuring the impact of fire and life safety education programs for the elderly population?

Research procedures included the compilation and analysis of data from Milwaukee Fire Department records, census reports, and Milwaukee County Emergency Medical Services records. Procedures also include a survey of other fire departments, surveys of the elderly population, and facilitated elderly focus group discussions.

Results showed that segments of the elderly population of the City of Milwaukee continue to grow in size and are disproportionately impacted by fire and accidental death and injury incidents including falls and motor vehicle and pedestrian accidents. Surveys of the elderly indicated that despite knowledge of risks, their impacts, and the ability to prevent accidents, education is necessary to achieve elderly safety. Research for this paper supports the recommendation that the Milwaukee Fire Department initiate an elderly fire and life safety education program to address fire and accidental death and injury incidents. The program is to be modeled after effective nationally developed programs that include community partnerships and a sound evaluation process.

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## INTRODUCTION

The American fire service has fostered a proud tradition of providing public fire safety education to communities across the United States. The National Commission on Fire Prevention and Control following the release of the report *America Burning* in 1973 initiated this proactive approach, aimed at preventing fires and fire-related injuries. Today, the fire service, in its increasing role as an emergency medical service provider, has recognized the need to expand its role in public education. In addition to fire prevention education, life safety and injury prevention has emerged as an added curriculum in public education programs. Powell (2002) describes the role of the fire service in providing public education.

> In earlier days, fire was certainly the main subject. More recently, programs have included non-fire topics: how to prevent burn injuries, electrical safety, baby-sitter training, pedestrian safety, CPR, and water safety, to name a few. This wider education focus, coupled with the fire service role a "first responder" to all sorts of emergencies, resulted in fire education becoming "fire and life safety education". (p. 5)

Current data and research indicate that certain segments of the population are at greater risk for injury and death due to specific hazards. The elderly population (age 65 and older) has been identified as a high-risk group, leading all other age categories in fire related deaths and deaths due to unintentional injury. When it comes to fire related fatalities, the elderly population is twice as likely to die in fires than any other group (FEMA, 1999, p. 3). Injuries have had a significant impact on this population group. In 1999 the elderly population suffered 32,219 deaths due to unintentional injury, fifty-five percent caused by falls and transportation related injuries (National Resource Center on Aging and Injury, 2001). These statistics have motivated fire service leaders to provide fire and life safety education programs that target the elderly population in communities across the United States.

The problem identified for this research is that the Milwaukee Fire Department has not implemented an effective public education program to address the fire and life safety risks of the elderly population of the City of Milwaukee.

The purpose of this research paper is to identify the specific fire and life safety risks to the elderly population in the City of Milwaukee and make recommendations for the development of an elderly public education program.

Research procedures include an analysis of data from Milwaukee Fire Department response records, census and demographic reports, and Milwaukee County Emergency Medical Services records. Procedures also include a survey of other fire departments, surveys of the elderly population, interviews of current fire service educators, and facilitated elderly focus group discussions. Literature sources were obtained from the Internet, the National Fire Academy's (NFA) Learning Resource Center (LRC), and the Milwaukee Public Library, Milwaukee, Wisconsin.

The descriptive research method was used to answer the following questions:

1.      What are the current and future demographics of the elderly population in the City of Milwaukee?

2.      What are the fire and life safety risks of the elderly population of the City of Milwaukee?

3.      What is the perception of the elderly population regarding fire and life safety risks?

4.      What are the issues that must be addressed in creating an educational program for the elderly population?

5.      What intervention strategies can be employed to effectively address elderly fire and life safety risks?

6.      What evaluation strategies are effective in measuring the impact of fire and life safety education programs for the elderly population?


## BACKGROUND AND SIGNIFICANCE

The Milwaukee Fire Department has a long history of involvement in public education. The mission statement of the Milwaukee Fire Department (MFD) states "the Milwaukee Fire Department is committed to protecting life and property within the city, through education" (MFD, 2003, p.1). Preventing the loss of life and property due to fire has been the core mission of every fire department throughout the United States.

As the scope of services performed by fire departments has evolved to include response to medical emergencies and life rescue, the focus of public education has transitioned to include a more all-risk approach to education within the community. Powell (1996a) states "over the generation, fire and life safety education has evolved from teaching fire safety exclusively to a more comprehensive educational effort that incorporates fire safety and other subjects as part of an overall injury prevention strategy" (p. 2-10). Powell raises the bar for fire service public education by redefining these programs as "comprehensive community fire and injury prevention programs designed to eliminate or mitigate situations that endanger lives, health, property, or the environment" (p. 2-3).

Fire chiefs today must rethink the role of the fire service in providing services and education to the communities they serve. Fire chiefs must recognize that they are the leaders in the community risk reduction process; evaluating community risks, identifying the at risk populations, and working with community leaders to reduce the negative outcomes of those risks.

Perhaps the most at risk group in the United States today is the elderly population, most commonly defined as those in the 65 years and older age group. This age group is the fastest growing segment of the American population, numbering over 35 million nationwide, and accounting for 12.4 percent of the total U.S. population. It is projected that this age group will more than double in number by the year 2050 when there will be an estimated 80 million seniors (U.S. Census Bureau, 2001). The elderly, due to diminishing physical and cognitive abilities, are at far greater risk than any other population group to death and injury from both fire and unintentional injury accidents.

The elderly account for over 25 percent of all fire fatalities and are two to four times more likely to die in a fire than any other segment of the population (USFA, 1999b, p. 3). In addition to fire fatalities, the elderly are more likely to be injured due to fires resulting from cooking, and the careless use of smoking materials and portable heaters. The elderly population, more than any other age group, is also at significant risk to non-fire related unintentional injury and death. Fifty-five percent of unintentional injury deaths among the elderly population are due to falls and motor vehicle and pedestrian accidents (Center for Disease Control, 2001).

The elderly population of the City of Milwaukee closely mirrors the national data both in percentage of population and risks to death and injury due to both fire and unintentional accidents. The elderly population in the greater Milwaukee area numbers 121,685 accounting for 13 percent of the total Milwaukee population (U.S. Census Bureau, 2001). Fire and injury statistics for Milwaukee elderly reveals a population at serious risk within the community.

In 1990 the elderly population represented 12 percent of fire fatalities in the City of Milwaukee, accounting for just 3 fatalities out of a total of 26. Since 1990 the percentage of elderly fire fatalities compared to all other population groups has risen from 12 percent to over 30 percent. In 2001, elderly residents accounted for 63 percent of all fire fatalities in the City of Milwaukee. Although fire fatalities in the City of Milwaukee have shown a reduction in numbers over the past 5 years, elderly fatalities, measured by percentage against all other population groups, continue to increase (MFD, 2003, p. 1).

Deaths and injuries due to unintentional accidents impact the elderly population of the City of Milwaukee on a level equal to the national averages and represent an increasing problem as that segment of the population continues to grow. Milwaukee elderly are visiting hospital emergency rooms at a rate higher than any other time. Marchione (2002) states that "trauma cases and hospital emergency visits reached all time highs in the Milwaukee area this year (2002), largely because of more car crashes and falls among the elderly" (p. 1). Injuries related to falls and motor vehicle accidents accounted for 62 percent of all elderly injury admissions to Milwaukee hospitals in 2002. The death rate from unintentional injury in Milwaukee's elderly population measures 93 per 100,000 elderly residents compared to 32 per 100,000 for adults in the 25-64 age group (Marchione, 2002, p. 1).

Since 1990 the Milwaukee Fire Department has demonstrated a significant commitment to public education. The impetus for this commitment was the result of unprecedented fire fatalities in the City of Milwaukee. That year, Milwaukee suffered 26 fire fatalities, 15 of which were of the 0-11 age group. Since 1990 the MFD has launched many successful fire education

programs targeting all population groups in the city, however, the emphasis has been strongly placed on the child population. In 1996 the MFD opened the "Survive Alive House" to deliver fire safety messages to Milwaukee school students in the fourth and seventh grades. In 2002 the Survive Alive House and mobile Survive Alive Houses brought fire safety education to over 37,286 students in the Milwaukee area (MFD, 2002, p. 4). This program has been directly responsible for reducing fire fatalities in the 0-17 age group. Over the last 5 years, Milwaukee has averaged 1.2 fire fatalities per year in this group.

Fire safety education targeted at the elderly population, on the other hand, has received limited attention within the MFD, this despite the increasing number of fire fatalities among this age group. Efforts have been made to educate this age group however they have been limited to a few presentations without a structured program to specifically target the elderly population. In 1995 the MFD launched the "Elder Safe" program. This program was delivered to the residents of 5 local elderly high-rise housing complexes and focused on a fire safety message. Since 1995 the Elder Safe program has continued, but is delivered only upon the request of the facility.

Data compiled both nationally and locally indicates that the elderly population is a high-risk group, falling victim to fire fatalities and unintentional injuries and death at a higher rate than any other segment of the population. Despite the trend within the fire service towards providing life safety or "all-risk" education for the elderly population, the MFD had not developed or implemented such a program.

The process of developing a public education program is outlined in the FEMA publication *Public Fire Education Planning--A Five-Step Process*. The steps outlined in this process include analyzing data to determine community risk and target audience, developing community partnerships, creating an intervention strategy, implementing the strategy, and evaluating the results (FEMA, 2002b, ii). A review of the MFD public safety education program revealed that none of these steps have been implemented relative to an elderly fire and life safety education program. Although the MFD has realized that the elderly population in the community is at risk, steps have not been taken to review pertinent data to determine the level of risk and validate the need for such a program. The Milwaukee Fire Department's Elder Safe program has had some success, however no attempt has been made by the MFD to develop a structured program that includes community partnerships and program evaluation (personal communication, Lieutenant Alonzo Chapmann, Public Safety Education Specialist, Milwaukee Fire Department).

The Milwaukee Fire Department has the organizational structure and commitment to public education in place to address the issue of elderly fire and life safety. The Department must realize their role in addressing the needs of the elderly population and the significant impact that such a program can have on improving the quality of life for the elderly in the community. Failure to address this issue leaves the elderly community at risk for fire and unintentional accident injury and death. Without intervention, the elderly population in Milwaukee will continue to lead in all statistical areas relative to these risks.

This applied research project is directly related to the Executive Fire Officer Program course *Leading Community Risk Reduction*. The Community Risk Reduction course focuses on

identifying risks within the community through a risk assessment, developing intervention strategies that involve the support of the fire service organization and the community, and evaluating the results of the action taken. Addressing elderly fire and life safety requires all elements of this risk reduction formula. The result of this research will provide a focus for implementing an elderly fire and life safety program within the Milwaukee community and will provide a source of information for other fire service organizations that are faced with a similar risk within their own communities.

## LITERATURE REVIEW

The review of literature for this research project focused on topics relative to the fire and life safety risks for the elderly population, and the implementation and evaluation of a structured fire and life safety education program. The majority of literature reviewed consisted of fire service textbooks, fire journals, Federal publications, and Internet documents. The researcher used the resources of the National Fire Academy (NFA) Learning Resource Center (LRC) to identify books, reports, and articles in trade journals and periodicals pertaining to elderly fire and life safety education. Research materials were obtained from the LRC while onsite for Executive Fire Officer training.  Use of the LRC's online card catalog facilitated this search while off site. A local public library was utilized to obtain literature through the interlibrary loan program.

The Milwaukee Fire Department literature library was used to reference several current publications by fire service organizations.  The department administrative files were reviewed for historical documentation on the department's evolution into public education. The researcher also utilized the Internet to access documents pertaining to the elderly population and elderly fire and life safety education.

The topics addressed in this review include demographics of the elderly population, fire safety risks for the elderly, life safety risks for the elderly, educational program development, existing education programs, adult learning strategies, and fire and life safety education program evaluation.

### Elderly Population in the United States

In this century, the rate of growth of the elderly population (persons 65 years old and over) has greatly exceeded the growth rate of the population of the country as a whole. Data accumulated during the 2000 national census indicated that the elderly population has continued to increase at a significant rate. In 2000, 35.0 million people 65 years of age and over were counted in the United States. This represents a 12.0 percent increase from 1990, when 31.2 million people in the same age group were counted. However, this age group's proportion of the total population dropped from 12.6 percent in 1990 to 12.4 percent in 2000 (U.S. Census Bureau, 2001).

According to the Census Bureau's "middle series" projections, the elderly population will more than double between now and the year 2050, to 80 million. By that year, as many as 1 in 5

Americans could be elderly. Most of the growth should occur between 2010 and 2030, when the "baby boom" generation enters the elderly years. During that period, the number of elderly will grow by an average of 2.8 percent annually (U.S. Department of Commerce, 1995).

In 2000 there were 18.4 million people ages 65 to 74 years old, representing 53 percent of the older population. The 75 to 84 year olds numbered 12.4 million people, accounting for 35 percent of the older population, and those age 85 and over numbered 4.2 million, or 12 percent of the older population (U.S. Census Bureau, 2001).

The "oldest of the old", those aged 85 and over, are the most rapidly growing elderly age group. During the 1990s the population 85 years and over increased by 38 percent, from 3.1 million to 4.2 million. It is expected that the age 85 and over group will number 19 million in 2050, making them 24 percent of elderly Americans and 5 percent of all Americans (U.S. Department of Commerce, 1995).

In 2000, there were 14.4 million men and 20.6 million women aged 65 and over. Women make up 58 percent of the population age 65 and older and 70 percent of the population age 85 and older. Older women are less likely than older men to be currently married and are more likely to live alone. In 1998, 41 percent of older women were living alone, compared with 17 percent of older men (Federal Interagency Forum on Aging Related Statistics, 2000).

Economically, the status of older Americans has improved markedly over the past few decades. The current generation of older Americans is more highly educated than previous older persons. In 1998, about 11 percent of women and 20 percent of older men were college graduates. Poverty rates have declined and there has been a substantial increase in net worth for older Americans. The percentage of older persons living in poverty declined from about 35 percent in 1959 to 11 percent in 1998.

Americans are also living longer than ever before. Persons age 65 in 2000 are expected to live another 18 years, on average, compared with persons age 65 in 1900 who had a remaining life expectancy of 12 years (Federal Interagency Forum on Aging Related Statistics, 2000).

## Fire Risks in the Elderly Population

Older adults age 65 and over represent one of the highest fire risk population groups in the United States. This distinction is attributed, in large part, to the fact that this age group is the fastest growing segment of the United States population. The APCO Institute in their report, *Fire Safety Risks for Special Populations* (2001), reports that

> as a result of progressive degeneration in physical, cognitive, and emotional capabilities, older adults present unique challenges in the field of fire protection, prevention, and safety. Complications associated with aging increase the likelihood that an elderly person will accidentally start a fire and at the same time reduce his or her chances of surviving it. As the nation's elderly population grows, the fire death toll will likely rise in direct proportion to that growth unless

measures are taken to eliminate the risks associated with this group. The fire safety community must address the fire safety needs of older adults or be faced with the potential for a severe public health problem. (p. 60)

The current statistics relating to elderly fire injury and death emphasizes the significance of this problem among the senior population and has become the impetus behind motivation within the fire service to place a focus on fire prevention education within this high-risk group. According to the United States Fire Administration (1999b)

- Over 1,200 Americans over the age of 65 die as a result of a fire each year. Older adults comprise over 25 percent of fire deaths of all ages, and 30 percent of fire deaths that occur in the home.

- Adults in the age group between 65 and 75 have a fire death rate twice that of the national average. Those between the ages of 75 and 85 are three times the national average, and those over 85 are four times the national average. (p. 3)

The causes of fire injuries and fatalities among the older population can be directly attributed to a number of behaviors and specific fire ignition sources. The elderly, more than any other age group, is likely to sustain a fire injury or death due to the careless use of smoking materials, cooking related incidents, or the misuse of portable heating appliances.

Fires caused by the careless use of smoking materials is the leading cause of fire deaths (33 percent) and the second leading cause of fire injuries (18 percent) in the elderly population. Death and injury due to careless smoking presents a significantly high risk within this age group since approximately 15 percent of the elderly population smoke tobacco products. Fires of this nature tend to result in far more serious injury to the elderly since the most commonly ignited material is the victim's clothing or bedding. This fire scenario significantly reduces the victim's ability to extinguish or escape the fire before being overcome (FEMA, 2002a, p. 5).

Cooking related incidents rank third among fire fatality causes in the elderly population, accounting for 12 percent of fatalities in this age group. In comparison, cooking incidents are the leading cause of fire related injuries among the elderly resulting in 27 percent of all fire related injuries (Powell, 2002, p. 147). The most common scenarios related to cooking involve elderly accidentally igniting loose fitting clothing, forgetting to turn off stove burners, and leaving food cooking unattended on the stove. A large number of cooking injuries are also the result of grease fires and hot oil scalds (USFA, 1999a, p. 11).

Heating related appliances account for over 19 percent of elderly fire fatalities and is the second leading cause of fire deaths. These types of fire incidents represent 12 percent of the fire injuries suffered by the elderly population (FEMA, 1999, p. 11). Gamache (1996) notes that combustibles placed or located too close to the heat source were the cause of 40 percent of fatalities in fires involving heating equipment. Clothing, in particular, was the material first ignited in 83 percent of the heat source fires for persons age 75 and older (p. 2-45).

Brodzka (1985) reviewed the records of 277 elderly persons who had been hospitalized for a burn injury over a five-year period of time. The records indicated that the cause of burns in 44.8 percent of the cases were the result of direct flame contact, 28.5 percent were from scalds, and 9.7 percent were chemical related (p. 66).

## Life Safety Risks in the Elderly Population

The elderly population, more than any other age group, is at significant risk for unintentional injury and death. Walker (1995) states

> unintentional injury is one of the leading causes of death to elderly people. The most common types of fatal injuries to people 60 and over are motor vehicle crashes, falls, fires and burns, surgical and medical complications, poisoning, choking, and drowning. Other types of accidental death that disproportionately affect the elderly people are adverse effects of heat and cold, pedestrian accidents, malnutrition, and food poisoning. (p. 1)

In 1999, 3,299,515 older Americans were injured and 32,219 died from unintentional injury accidents. Fifty-five percent of these deaths were caused by falls and transportation related injuries. The leading causes of unintentional death among people age 65 and over are as follows:

- Falls - 31 percent

- Motor Vehicle/Pedestrian - 24 percent

- Unspecified - 19 percent

- Suffocation - 11 percent

- Other - 8 percent

- Fire/Burns - 4 percent

- Poisoning – 2 percent

- Drowning - 1 percent (Center for Disease Control, 2001)

Unintentional falls present a serious health problem among older adults and are recognized as the leading cause of death and injury in the senior population. In the United States one of every three adults age 65 and older experiences a fall each year. In addition to the fatal outcome of these falls, the injuries associated with a fall can have a significant debilitating effect on older people. Injuries associated with a fall greatly threaten the elderly person's independence, reduce their mobility, and increase the risk of premature death.

The most common fall-related injuries are osteoporotic fractures involving the hip, spine or forearm. Approximately 212,000 fall-related hip fractures occur each year among adults age 56 and over with 75-80 percent of these injuries sustained by women. Over 50 percent of older adults who suffer hip fractures never regain their former level of function. In 1994, the total direct cost of fall-related injuries among older adults was estimated at $20.2 billion and the cost is estimated to escalate to 32.5 billion by the year 2020 (Center for Disease Control, 2001).

For people age 65 and older, more than half of all falls happen at home. DeVito (1988) examined 1,567 falls that occurred within the elderly population in the city of Miami Beach Florida and found the following:

- 94 percent of the falls occurred during daylight hours

- 54 percent of falls occurred in/around the house

- 42 percent occurred in the bedroom

- 34 percent occurred in the bathroom

- 9 percent occurred in the kitchen

- 5 percent occurred on stairs

- 4 percent occurred in the living room (pp. 1029-1035)

Risk factors for falls include both personal factors (e.g., neurologic and musculoskeletal disabilities, difficulties with gait and balance, use of psychoactive medications, and visual impairments) and environmental hazards (e.g., poor lighting, slippery surfaces, loose rugs, and other tripping hazards) (Center for Disease Control, 2001).

Motor vehicle and pedestrian accidents are the second leading cause of death and injury in the elderly population. Currently 26 million adults 65 and over hold a driver's license in the United States. In 1996, adults 65 and over accounted for 17 percent of all motor vehicle-related deaths. Each year, approximately 7,000 senior adults die in motor vehicle crashes, and an additional 175,000 older adults sustain nonfatal injuries in motor vehicle crashes. Nearly 80 percent of persons in this age group who died in motor vehicle-related crashes in 1997 were occupants of passenger vehicles, whereas approximately 16 percent were pedestrians (Center for Disease Control, 2001).

## Strategies for Educating the Elderly

Understanding how the elderly population learns is key to developing an effective fire and life safety education program for the senior population. A program developed for children, or the young adult, may not be as effective when delivered to the elderly population due to the fact that each age group responds to different teaching and learning techniques. Powell (1996b)

states that next to audience needs, the second factor that influences learning is age. Preschoolers, elementary school children, adolescents, adults, and seniors all learn in different ways. When it comes to learning, age combines the influences of psychological, social, and personal development with the effects of motor ability and communication skills (p. 2-31).

Educational programs for the elderly should focus on the vast array of life long experiences that they possess. In contrast to programs geared for the younger population, senior's learning interests are held by discussions that focus on history and past experiences. Jones (1996) recommends that the educator rechannel the delivery from "peprally" style to fact based, and informative, and suggests drawing on statistics and actual experiences. Adults have more interest in technical aspects and appreciate a more in depth look at the topic (p. 18).

Gamache (1996) suggests that educators should make senior presentations interactive. Older adults have a lot of experience and want to share that experience. Presenters should ask questions, invite input, and look to the older audience frequently for responses. "Demonstrations and interactive activities, such as having participants design their own escape plans or having discussions about real fire case studies, are important" (p. 2-45).

In a study conducted by the American Association of Retired People (2000), it was determined that the best way that older adults learn is through a direct, hands-on experience. The two most common, best learning methods, engage three of the five senses--seeing, hearing and touching. Most older adults indicated that they learn best by putting their hands on something, playing with it, listening to it, watching it, and finally thinking about it. In addition to live educational sessions, older adults indicate that the tools they use most frequently for learning include print media such as books, magazines, newspapers, and journals (p. 1).

Powell (1996b) makes the following suggestions for planning fire and life safety programs for the elderly:

- Allow plenty of time. Older adults may get anxious if time appears to be short.

- Count on a talkative audience, and include a question and answer period.

- Due to visual impairments, watch out for sunlight or glare in a room and darken the room when using audiovisuals.

- Limit programs to 30 minutes.

- Keep a low-pitched voice; speak slowly and clearly.

- Use or design simple handouts. Avoid busy materials and fancy fonts. (2-34)

**The Role of the Fire Service in Providing Fire and Life Safety Education Programs**

The role of the fire service as educators has expanded dramatically within the last decade. Fire personnel have evolved from a role as solely emergency responders to community risk reduction educators. The success that the fire service has demonstrated in the reduction of fire loss, injury, and death is being expanded into the field of universal injury prevention. The United States Fire Administration in its report *Solutions 2000* (2000), implores the fire service to promote "life safety" not just fire safety, in programs addressing older adults (p. 1).

Powell (2002) states that the fire and life safety educators no longer provide only "fire prevention" education. "Today's educator must have basic knowledge and skills in many life safety and injury prevention areas, such as burn-injury prevention, electrical safety, CPR, and water safety" (p. 1).

Further, the topics of fire education have expanded enormously over the past two decades. As fire and life safety education moves toward the 21st century, the trend illustrates the increasing growth and sophistication of the field. This philosophy has expanded to:

- Viewing education as a injury-control strategy

- Providing all-risk education

- Demonstrating the ability to better target programs and document success (p. 8)

Powell (2002) states that "all risk" education is a reality for today's educator. For the fire service, all risk education provides both a challenge and an opportunity. All risk education challenges fire and life safety educators by requiring knowledge in a much broader range of subjects than in the past. At the same time, all risk education is an opportunity because it widens the traditional audience for fire safety education (p. 11).

Unintentional injuries, especially in the elderly population, are increasingly being viewed as preventable events that can be addressed and reduced through public education programs. Gamache (1996) states that "increasingly fire and life safety advocates view such incidents as traffic injuries, drownings, firearm injuries, falls, and poisonings, not as random accidents, but as predictable events that, with proper education, are largely preventable" (p. 2-41). Powell (2002) regards injury as the most under-recognized major health problem facing the Nation today, and the study of injury represents unparalleled opportunities for reducing morbidity and mortality and for realizing significant savings in both financial and human terms--all in return for a relatively modest investment (p. 6).

**Developing an Elderly Fire and Life Safety Education Program**

Developing and implementing an integrated elderly fire and life safety education program requires an organized and committed effort from the local fire department and community organizations. Educational initiatives involve more than making a few presentations and

distributing brochures. Successful public educators understand the amount of effort involved and must commit to a long-term approach. In successful organizations, leaders understand that the program requires full organizational commitment that includes time for personnel to work on the program, resources to buy materials and equipment, and visible program support from all department members and the local decision makers (FEMA, 2002b, p. 3).

The steps necessary for the development of a successful education program are outlined in several fire service publications. Each source defines the process to be followed in the development phase of the program. Once the program is structured and developed, additional guidelines exist for the proper delivery of the message. Delivering the message includes testing the effectiveness of the message, and ultimately the evaluation of the program.

One popular approach to the development of a fire and life safety education program is outlined in the publication entitled *Public Education Planning--A Five Step Process* (FEMA, 2002b). This guide outlines the steps necessary for the development of an effective educational program.

The first step in the development process requires the organization to conduct a community risk analysis. A community risk analysis is the process that identifies fire and life safety problems and the demographic characteristics of those at risk in the community. A risk analysis provides insight into the most significant fire and life safety problems and the people who are affected by them. The results of the analysis create the foundation for developing risk reduction and community education programs. The risk analysis includes identifying data, developing a community risk profile, writing a problem statement, prioritizing issues, and identifying the target area and population (FEMA, 2002b, p. 1-3).

The second step in the process involves the development of community partnerships. Local organizations should work together to solve community safety problems. This approach brings a variety of resources to bear on the problem and reduces the cost to any one organization. Everyone has a vested interest in the success of the program and in improving the quality of life of the target audience. Such partners include government agencies, neighborhood groups, religious groups, senior centers, and health officials (FEMA, 2002b, p. 7).

The third step requires the creation of an intervention strategy. The intervention strategy is developed after a review of data concerning risks and target populations, and should include:

- Identifying places for intervention/education

- Identifying the target populations and locations

- Identifying the appropriate interventions

- Identifying resources required (FEMA, 2002b, p. 3-15).

The fourth step involves the actual implementation of the strategy. Prior to wide-scale implementation, it is suggested that the program be presented in a pilot format in limited locations to allow for immediate evaluation and possible modification. The strategy should be structured with a specific and defined timetable and periodic progress reports.

The final step in the process involves an evaluation of the educational program. It is important that the evaluation be done in a valid and objective manner to determine the true effectiveness of the program. A credible evaluation process is the only true measure of the success of the program. The evaluation process will determine if the program is supported in the future or if the program requires restructuring prior to continuing efforts to address the identified goals (FEMA, 2002b, p. 5-8).

## Curriculum Development for Fire and Life Safety Education Programs

The core of any fire and life safety education program is the curriculum outline and the substance of the material to be presented. The curriculum outline details the roadmap that is to be followed to deliver the message to the target audience. The outline ensures that the message is delivered in an orderly and consistent manner, and also provides a means to determine if the message has been effectively received.

Powell (1996b) details a seven-step approach to curriculum development. The seven steps include:

- Writing educational objectives

- Developing a course outline

- Developing a lesson plan

- Selecting instructional methods

- Choosing instructional materials

- Developing testing tools

- Allocating time (p. 2-34).

Education objectives answer the question: what will happen as a result of the education program? Objectives focus on what the student will do after the education session, not what they will know after the program. Objectives need to be realistic and measurable so that the students and the program can be evaluated.

Powell (2002) recommends a five-step process in developing a lesson plan. The lesson plan is a step by step guide for presenting the lesson. It outlines the material to be taught and the procedures to be followed in teaching the fire and life safety message. These five steps include: pretest, preparation, presentation/delivery, application, and evaluation (p. 175).

The pretest is designed to determine what the audience already knows before the education program. Knowledge of the audience's baseline on the subject allows the educator to customize the lesson plan to meet the needs of the participants. The pretest also provides an evaluation tool that can be used at the end of the lesson to determine if the message was effective in raising the knowledge level of the audience. Pretests are normally delivered as a pencil and paper written test, although oral and practical/performance approaches are also used. It is important to match the pretest format to the educational objectives that have been set for the program.

Powell (1996b) defines preparation as "the process of getting the students attention and letting them know why the material is important to them" (p. 2-35). Arousing curiosity, developing interest, and developing a sense of personal involvement on the part of the student are all part of the preparation process.

The presentation, or delivery, is the actual event of teaching the class. Presentation involves explaining the information, using supplemental training aids, and demonstrating methods and techniques. In the application step the student uses or applies what the instructor has taught during the presentation. Powell (2002) states "through the application process the students practice new techniques and skills. Whenever possible, each student should apply new knowledge by performing the task or solving problems" (p. 175).

During the evaluation process, the fire and life safety educator attempts to determine if the educational objectives have been met. The intent of the evaluation process is to see if the students can act independently to demonstrate that they can perform a "learned" task on their own. The evaluation step provides valuable insight into the effectiveness of the teaching technique.

Instructional methods are the means by which the message is delivered to the audience. Instructional methods include: lecture, illustration, demonstration, and discussion (Powell, 1996b, p. 2-36). Instructional materials are the tools that the educator uses to deliver the message and generally consist of printed matter, audiovisual materials, and props.

## Existing Fire Safety Education Programs

Fire safety education in the United States had its origin in the 1970's following the release of the report *America Burning* by the National Commission on Fire Prevention and Control (NCFPC). The Commission's report included recommendations for stronger fire safety education programs. The NCFPC (1973) concluded in the report that

> among the many measures that can be taken to reduce fire losses, perhaps none is more important than educating people about fire. Americans must be made aware of the magnitude of fire's toll and its threat to them personally. They must know how to minimize the risk of fire in their daily surroundings. They must know how to cope with fire, quickly and effectively, once it has started. (p. 3)

Fire safety education programs continue to be the backbone of the fire service in the campaign to reduce burn injury and the loss of life and property due to fire. Fire safety education programs have evolved over the years due to the persistent efforts of national fire safety organizations and individual fire departments that have recognized the value of such programs. Programs developed by national organizations have become the building blocks for the development of successful local, customized programs that are used day in and day out to educate community groups.

Several national fire safety programs targeted at the elderly population have been in existence for a number of years. One of the more successful programs is the *Lets Retire Fire* program developed by FEMA and the U.S. Fire Administration. This program is specifically structured for delivery to the elderly population and focuses on specific fire hazards that impact the senior age group. The program emphasizes the topics of fire safety in the kitchen, safe use of space heaters, and careless use of smoking materials. This program also offers fire educators presentation guidelines, fire safety fact sheets, brochures, and printed handout materials (FEMA, 1999, p. 2).

Another popular curriculum developed to combat the high risk of fire death and injury among seniors is the program *Prevent Fires-Save Lives* introduced by the U.S. Fire Administration. This program presents a lesson plan that includes:

- Installing and maintaining smoke detectors

- Planning your escape

- Don't isolate yourself

- Living near an exit

- Being safe around the home

    - smoking safety

    - cooking safety

    - electrical safety

    - space heater safety

    - medication safety (USFA, 1999b).

The *Prevent Fires-Save Lives* program includes a "Campaign Kit for Partners" that consists of fact sheets, a safety checklist, and a sample press release and public service announcement for distribution to local newspapers or community groups.

FEMA (1999) in its publication *Fire Risks for the Older Adult* stresses a fire safety curriculum that includes a message that is organized into three sections: Before the Fire, During the Fire, and Fire Prevention. The "Before the Fire" message includes:

- Identifying the nearest exit

- Installing smoke detectors

- Living near an exit

- Planning and practicing escape plans

- Involving the fire department

The "During the Fire" segment stresses:

- Get out and stay out

- Test doors before opening them

- Stay low and go

- What to do if you are trapped

- Stop, drop, and roll (p. 1)

The Fire Prevention message addresses fire safety risks in and around the home.

Fire safety messages can be delivered in a number of different formats. The NFPA (1991) produced the video *Senior Fire Safety with Jonathan Winters*. This video presents the entire fire safety message through a number of short stories delivered by elderly actors. In addition to addressing fire risks, the actors in the course of their individual stories, demonstrate specific behaviors and techniques that reduce fire risks and injury.

## Existing Life Safety Education Programs

The topic addressed by fire service educators has expanded greatly over the past two decades. Life safety education or "all risk" education has been blended into the fire safety programs to produce a message that is directed at total injury prevention. This approach has broadened the educational message and altered the format used to provide public education. Life safety education has become an effective approach to reduce unintentional injury and death among the highest risk population, the elderly. Many successful life safety education programs exist today, some developed at the national level, and many developed by individual fire departments and elderly service organizations. In addition to presenting a fire safety message,

these programs focus on reducing the most common injuries suffered by the elderly population including falls and motor vehicle and pedestrian accidents.

Perhaps the most successful and widely used elderly program to focus on all-risk education is a program developed by the NFPA entitled *Remembering When: a Fire and Fall Prevention Program for Older Adults*. This program, in addition to fire safety, includes messages aimed at preventing falls. The approach and content of the program centers around 16 key messages developed by a technical advisory group comprising of experts and practitioners from national and local safety organizations as well as information obtained through focus groups testing in high risk states (NFPA, 1999, p. 2).

*Remembering When* was developed to provide an interactive experience for the elderly population. The program focuses on a nostalgia theme and outlines lesson plans that utilize discussion, trivia quizzes, colorful brochures, and handouts. The lesson plan includes formats for delivering the message in group settings as well as individual home visits.

The fall safety portion of the program includes eight messages geared towards fall prevention. The lesson emphasizes:

- Exercising regularly

- Taking your time when moving

- Clearing obstructions in walkways

- Insuring proper vision

- Reducing slippery surfaces

- Eliminating throw rugs

- Maintaining stairway safety

- Maintaining proper footwear (NFPA, 1999, p. 3)

One of several successful local fire and life safety programs in use today is a program developed by the Phoenix Fire Department. In 1996 the Phoenix Fire Department (PFD) developed the "Fire and Life Safety for Seniors" program. The origin and ongoing success of the program is credited to a Senior Outreach Team that, in addition to the fire department, includes several community groups, city agencies, and elderly service organizations. The program book produced by the PFD includes a guide to presentation techniques, program marketing, and follow-up program evaluation. Programs are structured for presentation in many different elderly living environments including individual homes, elderly high-rise housing complexes, and nursing homes. In addition to a fire safety message, the program focuses on fall prevention and emergency preparedness.

The Equitable Gas Company in Pittsburgh, Pennsylvania has initiated another effective life safety program. This program is labeled "Safety for Seniors" and is dedicated to training and safeguarding elderly residents through in-home safety checks. Equitable Gas, in partnership with Interfaith Volunteer Caregivers offers free in-home safety checks that focuses on smoke detectors, nightlights, bath mats, flashlights, and a fire escape plan. The home safety checks are provided by a group of local volunteers that conduct home inspections one day per week in a designated neighborhood. The volunteers are required to complete a one-hour training program prior to participation as a program educator.

## Fire and Life Safety Program Evaluation

The evaluation process is an important step in a fire and life safety education program. There are several reasons why there must be an evaluation component. First, the evaluation is necessary in determining if the program is worth repeating in the community or elsewhere. Second, it is used to elicit feedback on how to improve the program. Finally, and perhaps most important, the evaluation is necessary to provide rationale for future financial support of the program. Schaenman (1996) states that "the main purpose of public fire and life safety education is to improve safety, and unless one can demonstrate that a program is achieving this goal, it will be hard to convince decision makers in the long run that the program should be supported" (p. 2-67). Powell (1996a) makes a similar point in stating "too often even the most highly regarded prevention education programs are reduced or eliminated during the budget cuts because they lacked tangible data to prove their positive impact in reducing the risk of fire or injury in the community" (p. 2-4).

The evaluation process can be simplified to a reasonable degree in that it is a measure of change caused by the specific educational program. FEMA (1991) in its publication, *Short Guide to Evaluating Local Public Fire Education Programs*, states that an education program caused change if:

- A majority of the community was reached with the message.

- A test sample of the people showed a sharp increase in knowledge of what to do.

- A significant portion of the community now exhibits the proper behavior (p. 3).

Each of these changes can be measured and become an important part of the evaluation report.

A proven approach to evaluation involves the analysis of five components of a fire and life safety education program. Measuring the impact of each of these components can result in an effective evaluation tool that stands on solid data and brings a high level of credibility to the program and the agencies involved in the process. The five components include: outreach activity, knowledge change, behavior change, environmental change, and the end impact (Powell, 2002, p. 188).

Outreach activity is simply a measure of how many people were exposed to the program or, what percent of the target audience received the education message. When measuring outreach activity, it is important to state the number of audience contacts in relation to the size of the total target audience (FEMA, 1991, p. 3).

Knowledge change is an increase in the understanding of fire and life safety practices exhibited by the audience. The audience must understand the material and remember it. One way to measure knowledge change is to conduct pre- and post-testing of the audience. An even better approach is to test retention several weeks, months, or even a year after the program is conducted (FEMA, 1991, p. 4). Schaenman (1996) states that:

> Often such tests are given before a program starts, or at the beginning of the first class, and then repeated at the end of the training using the same test instrument. Sometimes the post-test uses a slightly different set of questions. The results of the pre-test not only establish a baseline, but also gives insight into exactly where the group is weak. The post-test shows the increase in knowledge. The average score and the range of scores for the pre-test versus the post-test describe the change quantitatively. (p. 2-73)

Behavior change is a change in the audience's actions. The intent of the education program is to provide knowledge to the audience that will result in a behavior change that will have a positive impact on life and safety in the community. Measuring behavior change is another tool in the evaluation process. One way to measure behavior change is to conduct a random survey of the target audience before the public education campaign starts, and then repeat the survey after the campaign is completed (FEMA, 1991, p. 4). The second survey should focus on behavior changes that have been implemented by the audience that was reached through the education program.

Environmental change usually follows a change in knowledge. Powell (2002) states "environmental change is a change in the home or workplace following a presentation. The environmental change involves making a change in the surroundings or in the fire and life safety equipment in the home or workplace" (p. 189). Environmental change is often measured by surveying the target audience at a designated point in time after the program has been delivered.

The end impact of a fire and life safety program is reflected in data collected that pertains to the specific risks that the educational program addressed. End impact data for most fire and life safety educational programs would include: the number of fires, accidents, deaths, injuries, and the total dollar loss or economic impact of fire and life safety events. End impact data accumulated some time after the educational campaign should reflect a reduction in those community risk events that were addressed in the campaign.

Making comparisons is also an effective means of evaluating the effectiveness of an educational program. Schaenman (1996) explains that perhaps one of the most basic concepts of an evaluation is to demonstrate that some benefit can come from having an educational program compared to not having it. Several approaches to making these types of comparisons include:

1.   Compare changes in the community before and after the introduction of a program.

2.   Compare one part of the community to another to see if there is a difference between areas that have education programs versus those areas that have not experienced the program.

3.   Compare the community to other communities of similar makeup that have not implemented a program.

4.   Compare changes in a targeted type of fire (or life safety behavior) to the trend in other types of fires. In other words, did the program reduce a specific risk compared to any measurable changes in a risk that was not addressed in the education campaign. (p. 2-68)

## PROCEDURES

The purpose of this research project was to identify the specific fire and life safety risks to the elderly population in the City of Milwaukee and to make recommendations for the development of an elderly public education program. Research procedures followed in this project included the following:

- A survey of fire departments nation-wide to determine the structure of effective fire and life safety education programs targeted for the elderly.

- A survey of the elderly population in the City of Milwaukee to determine the elderly perception of fire and life safety risks.

- Elderly focus group discussions to gain perspective on the elderly perception of fire and life safety risks, elderly fire and life safety knowledge, and preferences to educational methodology.

- Data search of City of Milwaukee health records regarding elderly fire and unintentional accident injuries and death.

- Interview of current Milwaukee Fire Department public education staff.

### Fire Department Surveys

The surveys were sent by U.S. mail to the Chief Executive Officers (Fire Chief, Fire Commissioner, etc) of the various departments on February 20, 2003.The survey was accompanied by a cover letter (Appendix A). The letter detailed the intent of the survey and explained that the survey was to be used to provide information for an applied research project

related to the Executive Fire Officer Program. The letter expressed that the surveys be returned by March 24, 2003.

Surveys were sent to 40 fire departments throughout the United States. Departments were chosen based on close comparison to the City of Milwaukee Fire Department. Criteria used to determine survey population focused on the population of the city and number of sworn personnel. The *National Directory of Fire Chiefs and EMS Administrators* (2002, 11th Edition) text was used to identify these cities. Fire departments that responded to the survey are listed in Appendix B.

Twenty-six surveys were returned (65 percent). A copy of the survey is represented in Appendix C. The intent of the survey was to gain insight into the structure of elderly fire and life safety programs used within the fire service. This survey was used to determine the following:

- The number of fire departments currently engaged in providing both fire and life safety education targeted at the elderly population within their community.

- The type of program in place.

- The message delivered for each type of program.

- The methodology used to provide the education.

- The personnel used to present programs.

- Partnerships with other agencies.

- Locations where programs are presented

- Evaluation tools used for each type of program.

## Elderly Population Surveys

The researcher disseminated surveys to elderly population groups assembled on two occasions at separate locations. A copy of the survey is contained in Appendix D. The first group of participants were elderly residents located at the East Terrace elderly living complex located at 801 North East Avenue, Milwaukee, Wisconsin. The survey was conducted on February 28, 2003 and involved 24 participants aged 55 and older. The second group of participants were elderly City of Milwaukee residents that gathered at the US Bank Building, 1100 E. Wisconsin Avenue, Milwaukee Wisconsin on March 11, 2003. These participants were guests of the City Development Corporation and were invited to participate in a fire safety education program. This group consisted of 37 elderly participants aged 55 and older.

The intent of the survey was to gain insight into the perception of fire and life safety risk as seen by the elderly population of the City of Milwaukee. The survey asked the participants to rate perceived risks in their lives from a list of 20 risk events. They were then instructed to designate the impact of each risk and the probability of preventing each risk event from occurring. The survey also asked questions to determine where they felt they were at greatest risk, what were life threatening types of fires, and how they obtained most information in their lives. The format for this survey was modeled after research conducted by C2 Technologies, Inc. and detailed in their report entitled *Effectiveness of Public Fire Safety Education*.

The data from the surveys conducted at both locations was tabulated and the results is presented in Appendices F, G, and H. Microsoft® Excel software was used to format the data and represent the information in bar graph form.

## Elderly Focus Groups

The researcher conducted a focus group discussion with both elderly groups as described in the above survey procedure. Following the completion of the survey, the researcher invited the elderly participants to join in a group discussion about fire and life safety issues. A copy of the focus group discussion format is outlined in Appendix E

The intent of the focus group discussion was to determine the following:

- The audience's awareness of fire and life safety issues.

- Prevention measures currently employed by the audience

- Where the audience had learned the information they acknowledged.

- What the audience perceived to be the best methodology to present fire and life safety messages to their age group.

- Who the audience felt should deliver a fire and life safety message.

- Where the audience felt fire and life safety education programs should be conducted.

## Elderly Fire and Unintentional Accident Death and Injury Data

In an effort to determine the extent of risk to the elderly population within the Milwaukee community the researcher structured specific requests for pertinent data.

A request was made to the Milwaukee Fire Department Bureau of Technical services to provide data on fire fatalities by age group for all years in which data was maintained. In addition, a request was made for all data that related the number of fires, the origin of fires, and fire injuries to the elderly population in the City of Milwaukee.

A request was made to Milwaukee County Emergency Medical Services to provide data relative to elderly injuries in the City of Milwaukee. The request specifically asked for a summary of the reported "cause of injury" for all elderly patients treated by Milwaukee Fire Department paramedics. The data was requested in a format stating the total number of patients treated for each "cause of injury" broken down by age groups 65-74, 75-84, and age 85 and older. An additional request was made for a total count of "chief complaint type" for each age group as defined above.

## Interview

On March 2, 2003 the researcher conducted an interview of Milwaukee Fire Department, Fire Public Education Specialist--Fire Lieutenant Alonzo Chapmann. The intent of the interview was to gain a current and historical perspective on the Milwaukee Fire Department's efforts to provide elderly fire and life safety education.

## Assumptions and Limitations

The researcher was limited in obtaining data from the Milwaukee Fire Department regarding the number of fires, the origin of fires, and fire injuries to the elderly population in the City of Milwaukee. Although the Milwaukee Fire Department maintains data on fire incidents and cause, this data can not be referenced to a particular age group. Injury data related to fire incidents and unintentional injuries that are treated at the basic life support level are reported via a standard Milwaukee Fire Department emergency medical services report. This data is not currently stored in a database for retrieval.

## RESULTS

**What are the current and future demographics of the elderly population in the City of Milwaukee?**

The 2000 census data of elderly persons living in Milwaukee County closely parallels the percentages reflected in the 2000 national census data. In 2000, Milwaukee County counted 940,164 persons. The population of elderly persons age 65 and over numbered 121,685--reflecting 13 percent of the total population. Persons age 65 to 74 numbered 59,920 (6.4 percent of the population), age 75 to 84 numbered 45,253 (4.8 percent), and 85 and over numbered 16,512 (1.8 percent of the total population).

Since 1990 the size of the older population in Milwaukee County has decreased by 6.8 percent. Population decreases were recorded in the 65 to 74 year old age group, while population increases were recorded in the 75 to 84 age group and the 84 and over population. Based on national projections, it is anticipated that the elderly population in Milwaukee County will double in number within the next forty-five years.

Of the 377,729 households in Milwaukee County, 86,733 (23 percent) include at least one-person age 65 and older. A total of 79,979 housing units have a "household head" aged 65 or older, and 65.9 percent of these are owner occupied. A majority of the older population (57.5 percent) lives in "family households" containing at least two people related by blood or marriage, but another 33.2 percent of people age 65 or older live alone. A total of 6,091 people age 65 and older (5 percent of the age group) live in nursing homes.

**What are the fire and life safety risks of the elderly population of the City of Milwaukee?**

The elderly population in the City of Milwaukee is at significant risk for fire injury and death. In 2001, elderly residents accounted for 63 percent of all fire fatalities in the City of Milwaukee. Although total fire fatalities in the City of Milwaukee have shown a reduction in numbers over the past 5 years, elderly fatalities, measured by percentage against all other population groups, continue to increase. The elderly population in the City of Milwaukee has accounted for 28 percent of all fire fatalities averaged over the past 13 years while accounting for less than 12 percent of the population. Fire fatalities among the elderly has shown a 9 percent average increase over the last 6 years when compared to the previous 6 years (MFD, 2003, p. 1).

Deaths and injuries due to unintentional accidents impact the elderly population of the City of Milwaukee on a level equal to the national averages. Injuries related to falls and motor vehicle accidents accounted for the greatest percentage of hospital admissions for elderly in the City of Milwaukee. In 2002, 530 elderly patients were admitted to emergency departments with significant life threatening injuries. Falls accounted for the greatest percentage of these cases numbering 199 (38 percent). Pedestrian and motor vehicle accidents accounted for the second greatest amount of injury cases numbering 127 (24 percent). The third greatest cause of injury was poisoning which accounted for 42 admissions (8 percent). The death rate from unintentional injury in Milwaukee's elderly population measures 93 per 100,000 elderly residents compared to 32 per 100,000 for adults in the 25-64 age group (Marchione, 2002, p. 1).

**What is the perception of the elderly population regarding fire and life safety risks?**

The perception of the elderly regarding fire and life safety risks was determined by surveying seniors and obtaining input through focus group discussions with this age group.

Seniors were asked in a survey to identify from a list of 20 events, those events that they considered could occur in their lives within the next 5 years. The purpose of this survey was to determine to what degree the elderly perceived certain events as a risk in their lives, especially those events that have been identified through data to have a significant impact on the elderly age

group. The results of the survey are depicted in a bar graph in Appendix F. The survey results indicate that the number one risk in their lives is injury from a fall. Injury from a fall was chosen by 93 percent of the elderly surveyed. Injury from a vehicle accident rated at number 4 and was selected by 77 percent of the audience. Residential fire ranked fifth, chosen by 72 percent and the likelihood of injury due to a pedestrian accident ranked seventh with 68 percent. Only 60 percent of those seniors surveyed felt that injury from a burn was likely within the next five years of their lives. When asked to identify the five events most likely to occur in their lives they indicated in order: winter or ice storm, injury from falling, serious health problem, vehicle accident, and residential fire.

The elderly were also surveyed to determine which events on the list would have the greatest impact on their lives if they were to occur. The participants used the following scale:

1.      No Impact

2.      Small Impact

3.      Medium Impact

4.      Large Impact

The results of this question are shown in Appendix G. Injury from falling was ranked second with a mean of 3.30. Impact from a residential fire ranked third with a mean of 3.13 and vehicle accident was number 5 with a mean of 3.07. Injury from a burn finished in the middle of the list of events at number 9 with a mean of 2.72.

Using the same list of events, the elderly were asked to indicate whether they felt that they could prevent the events from occurring. The participants used the following scale:

1.      There is nothing I can do to prevent this risk from happening

2.      There are a few things I can do to prevent this risk from happening

3.      There are many things I can do to prevent this risk from happening

4.      There are so many things I can do that I can probably prevent this risk from happening through my actions

The results of this question are shown in Appendix H. No single event received a mean rating of 3.0 or higher. Participants felt that they would have the greatest success preventing an injury from falling. Injury from falling received the highest rating with a mean of 2.65. Seniors were slightly less confident about preventing a residential fire, rating that with a mean of 2.45. Injury from a burn ranked fifth with a mean of 2.42. Participants felt even less could be done to prevent pedestrian and vehicle accidents rating those two with a mean of 2.25 and 2.12 respectively.

The elderly were also asked in the survey to identify where they felt they were most likely to experience an injury. They were given four choices and indicated that their own home was the place where they were most likely to experience an injury. The results are as indicated below:

  51 percent - In your own home
  40 percent - Outdoors
  8 percent  - In a public building
  2 percent  - In someone else's home

When asked to review a list of four fire events and indicate each type of fire that they believe could be life threatening, they responded as follows:

  87 percent - Stove top fire in a frying pan
  87 percent - Electrical fire
  60 percent - Unattended cigarette fire
  48 percent - Wastebasket fire

Elderly focus groups were assembled and the participants asked to describe the types of fire hazards that they were most likely to encounter in their daily life. The following events were mentioned:

- Stove top fires and cooking accidents

- Unattended cigarettes

- Electrical fires

- Space heaters

- Unattended candles

When asked what are the things that they do to prevent fires they responded:

- Do not leave the stove unattended

- Do not smoke when tired

- Check electrical cords

The group was also asked to describe what they considered the greatest life safety issues in their lives. They mentioned the following:

- Falls

- Crime

- Car accidents

- Pedestrian accidents

When asked what are the things that they do to prevent these things from happening they responded:

- Walking slowly

- Wearing the right shoes

- Obey pedestrian walk signals

- Do not stand on chairs

- Keep walkways clear

**What are the issues that must be addressed in creating an educational program for the elderly population?**

Several issues concerning the creation of an elderly fire and life safety educational program have been addressed in the research for this project. Many of these issues were the focus of the Executive Fire Officer course *Leading Community Risk Reduction* (LCRR). The LCRR course presented a community risk reduction model that included the phases of risk assessment, organizational support, intervention strategies, community support, action plan, and evaluation strategy. These phases were addressed in the literature review and also addressed in the survey sent out to fire departments nation-wide to obtain input into the formation of their public education programs. The following areas are critical to the initiation of an elderly fire and life safety educational program.

## Risk Assessment

A community attempting to impact the effects of risks within the community must assess all risks, to all populations, that may be present within the community. A risk analysis provides insight into the most significant fire and life safety problems and the people who are affected by them. The results of the analysis create the foundation for developing risk reduction and community education programs. The risk analysis includes identifying data, developing a community risk profile, writing a problem statement, prioritizing issues, and identifying the target area and population (FEMA, 2002b, p. 1-3). Data for conducting a community risk reduction assessment is available in fire department records and reports, health department records, and hospital and census reports.

## Target Audience

The risk assessment will determine what audience needs to be targeted to achieve results from a risk reduction program. Data and reports reviewed give insight into which segments of the population are at risk and what risks must be addressed to achieve positive results.

## Program Message

The message to be delivered in a fire and life safety educational program should be based on the risk to be addressed, the target audience, and most important, the objective to be achieved. A review of current national and local fire and life safety programs tailored for the elderly population reveals a consistent curriculum based on the specific fire and life risks that affect the elderly. Fire safety messages focus on reducing death and injury due to fires related to cooking, smoking, heating, and electrical use. These messages include lessons on smoke detectors, escape plans, and use of the 911 system. Life safety messages for the elderly focus on preventing injury from falls and vehicle and pedestrian accidents. Additional messages are geared to the reduction of health associated conditions such as heart attack and stroke.

## Program Methodology

Program methodology refers to the techniques used to deliver the message. Methodology for providing education to the elderly population includes the use of lecture, video, informational pamphlets, demonstration, and public media messages.

## Program Educator

Departments involved in fire and life safety education must determine who is most effective in delivering the message to the target audience. Most departments use sworn personnel to deliver the message. Civilians specially trained in fire and life safety as well as representatives of elderly organizations are also used in some communities to provide the education.

## Program Partnerships

Effective fire and life safety programs must seek partnerships within the community to ensure program success. Local organizations should work together to solve community safety problems. This approach brings a variety of resources to bear on the problem and reduces the cost to any one organization. Such partners include government agencies, neighborhood groups, religious groups, senior centers, and health officials.

## Program Location

Elderly fire and life safety education programs may be delivered in a variety of locations. Departments must determine those locations that maximize exposure to the target audience. Decisions must be made on the logistics of bringing the program to the audience or bringing the audience to the program.

## Program Evaluation

Program evaluation is a critical step in the educational program. A credible evaluation process provides the only true measure of the success of the program. The evaluation process will also determine if the program needs to continue or be restructured in the future. The evaluation is often critical in determining if the program receives financial support from the community.

**What intervention strategies can be employed to effectively address elderly fire and life safety risks?**

A survey of fire departments nation-wide and information received during focus group discussion with the elderly were used to address this research question.

To determine the extent of fire department involvement in public education fire departments were asked if they provided fire safety education to their communities targeted at the elderly population. Of the 26 departments that responded to the survey, 22 (85 percent) indicated that they performed elderly fire safety education in the community. The departments were also asked if they provide elderly life safety education. Thirteen of the departments (50 percent) indicated that they did perform elderly life safety education programs in their community. Of the departments that responded to the survey, 9 (35 percent) indicated that they integrated fire and life safety education for the elderly into one program.

In regards to both fire safety and life safety education, departments were asked if they developed their own programs, used nationally developed programs, or used a combination of the two. The survey indicated that for fire safety education, 7 departments used their own programs, 1 used only a nationally developed program, and 14 departments used a combination of the two. The survey indicated that for life safety programs, 4 departments used their own programs, 3 used only a nationally developed program, and 6 departments used a combination of the two.

The most popular national program used by departments for both fire and life safety is the NFPA *Remembering When* program. This program is used by 11 out of 14 (79 percent) departments that rely on a national program to conduct fire safety education, and 8 out of 9 (89 percent) departments that rely on a national program to conduct life safety education. One department used the USFA program *Lets Retire Fire* for fire safety education and 1 department used the FEMA *Fire Safety Checklist* for both fire and life safety education.

The large majority of the departments surveyed indicated that they used sworn department personnel to conduct fire and life safety education. Only 23 percent surveyed indicated that they used civilians for fire safety education and the percentage was the same for life safety education. Departments were also asked if they formed partnerships with outside organizations or agencies to conducted education programs. The survey indicated that 41 percent of the departments used community partners for fire safety education while 62 percent used partners for life safety education. The most common partners listed for both types of education included senior citizen organizations, the Department of Aging, and the Red Cross. The elderly were asked in focus group discussion who they felt should deliver fire and life safety messages. For fire safety messages it was unanimous that the fire department should deliver the message. For messages focusing on life safety, the elderly mentioned most the fire department, police department, and health care professionals.

Departments were asked what type of delivery method was used to deliver fire and life safety messages to the elderly. The lecture process was the most popular approach used by departments for both messages. The next popular approach was video, pamphlets, public media, PowerPoint® and then demonstration. When the elderly were asked how they preferred the life safety message to be delivered, they responded that they preferred a lecture, video, television or newspaper message. In the survey with the elderly population, seniors were asked how they received most of their information. They indicated, in order, that they received it from television, newspaper, conversation with friends, books, informational literature, and lastly from educational classes or seminars.

Fire departments were also surveyed as to where they performed most of their elderly fire and life safety educational programs. Senior centers were the most popular venue for this type of education. Second on the list was public events specifically geared for the elderly, followed by elderly high-rise housing complexes. In addition to these locations, most often mentioned were private homes, churches, nursing homes, and finally elderly day care centers. When the seniors in the focus group were asked where they preferred to receive the message, they indicated that they wanted the message delivered directly to their home or in a community room located in their living complex. They indicated that they did not wish to travel to receive the message unless transportation was provided for them.

Finally, fire departments were surveyed to determine what message is delivered for each type of program. The topics addressed in fire safety programs are listed below accompanied by the percentage of departments delivering that message.

- 82 percent - Escape plans

- 64 percent - Kitchen safety

- 59 percent - Smoke detectors

- 55 percent - General fire prevention

- 36 percent - Smoking safety

- 18 percent - Electrical safety

- 14 percent - 911 use

- 9 percent   - Heating safety

- 9 percent   - Carbon monoxide safety

The topics addressed in life safety programs are listed below accompanied by the percentage of departments delivering that message.

- 77 percent - Fall prevention

- 55 percent - General fire related safety

- 18 percent - Burn safety

- 18 percent - Home safety

- 14 percent - Health education

**What evaluation strategies are effective in measuring the impact of fire and life safety education programs for the elderly population?**

Program evaluation is a critical phase of the fire and life safety educational process. It is important to be able to demonstrate the effectiveness of the program in reaching the outlined objectives and ultimately impacting the risk within the community. Powell (2002) outlines five components of the evaluation process. Those components include: outreach activity, knowledge change, behavior change, environmental change, and end impact (p. 188).

Fire departments surveyed for this research were asked if they had an evaluation process in place to determine the effectiveness of their elderly fire and life safety education programs. The surveys indicated that of the 22 departments that provide fire safety education, 14 (64 percent) have an evaluation process in place.  Nine departments (64 percent) provided evaluation by measuring outreach activity. These departments measure the effectiveness of their programs based on the total number of participants that were reached.

Measuring knowledge change was used as an evaluation tool by only 2 (14 percent) of the departments that indicated that they evaluate their programs. These departments indicated that a pre- and post-test was used as the evaluation tool. None of the departments that responded to the survey indicated that they used measures of behavior or environmental change for program evaluation.

Measuring program effectiveness through end impact data was indicated as the most popular approach to program evaluation. Twelve (86 percent) of departments that provide

program evaluation indicated that they use the end impact measurement approach. These departments strictly used the number of fire responses and total fire fatalities to measure their program's success.

Those departments that provide the life safety component to elderly education were also asked if they have a process in place to evaluate the effectiveness of their programs. Of the 13 departments that provide elderly life safety education 7 (54 percent) indicated that they do evaluate their programs. Four (31 percent) indicated that they use outreach activity as a measure of program success, and 3 (21 percent) use end impact data as an evaluation tool. The end impact data mentioned included the total number of emergency responses and total number of injuries in the elderly population.

None of the departments that were surveyed indicated that, excluding end impact data, they used any type of community comparisons to evaluate the effectiveness of their programs. These comparisons involve measuring changes in one part of the community that received education versus a part that did not receive the program. Or, comparing one community that received education versus a different community of comparable demographics that did not receive the education.

## DISCUSSION

### Relationship between Study Results and Literature

Elderly adults age 65 and older represent the highest risk group in the United States for death and injury due to both fire and unintentional accidents. According to the United States Fire Administration (1999b) older adults comprise over 25 percent of fire deaths of all ages and 30 percent of fire deaths that occur in the home (p. 3). Milwaukee Fire Department data indicates a direct parallel to the national statistics. In 2001, elderly residents in the City of Milwaukee accounted for 63 percent of all fire fatalities in the city. The elderly population in the city has accounted for 28 percent of all fire fatalities averaged over the past 13 years (MFD, 2003, p. 1). Non-fire related unintentional death and injury presents a similar resemblance when comparing national and local data. National data indicates that the leading cause of injury for adults is accidental falls representing 31 percent of all elderly injuries. This is followed by motor vehicle/pedestrian accidents that account for 24 percent of elderly injuries (Center for Disease Control, 2001). Elderly injury data for the City of Milwaukee indicates that accidental falls account for 38 percent of all injuries and motor vehicle/pedestrian accidents account for 24 percent.

Surveys of City of Milwaukee elderly residents indicates that their perception of unintentional death and injury risks is in line with the national and local data. The elderly surveyed indicated that their number one risk concern is accidental falls, selected by 93 percent of participants. Vehicle accidents ranked number four, chosen by 72 percent, followed by residential fires (72 percent) and pedestrian accidents at 68 percent. Those surveyed showed an understanding of the impact of these risks on their lives indicating that falls, residential fires, and vehicular accidents all rated above a 3.0 mean revealing a "medium impact" level. The surveys

also indicated that the elderly perceived each of these risks as preventable; rating falls, residential fires, burns, and vehicular accidents at an average mean of 2.4, indicating that there are more than a few things that could be done to prevent injury from these risks.

The leading causes for elderly fire fatalities based on national data include, in order, careless use of smoking materials, heating and electrical appliances, and cooking related fires (FEMA, 1999, p. 11). The majority of Milwaukee elderly surveyed conveyed a similar regard for these types of fire scenarios. An average of 78 percent of those surveyed indicated that they perceived a stovetop fire, an electrical fire, and an unattended cigarette fire as a life-threatening event.

Surveys of fire departments nation-wide reveals a trend towards "all risk" education for the elderly audience. Powell (2002) states that the fire and life safety educators no longer provide only "fire prevention" education, instead viewing current education as a total injury control strategy (p. 1). Of the 26 departments that responded to the survey, 22 indicated that they provide fire safety education specifically targeting the elderly population and of these, half of the departments provide life safety education for the elderly.

A review of nationally developed fire and life safety education programs revealed several effective programs that have been used by fire departments across the country to provide fire and life safety education to the elderly. The NFPA developed program *Remembering When: a Fire and Fall Prevention Program for the Elderly* is one of the most popular programs. The survey of fire departments indicates that the majority of departments use a nationally developed program format for elderly education. Of the 14 departments that rely on a nationally developed program for elderly fire safety education, 79 percent use the *Remembering When* program. Of the 9 departments that rely on a nationally developed program for elderly life safety education, 89 percent use the *Remembering When* program.

A key component identified in the fire based community education process is the relationship between the fire service and community organizations or partners. Such partners include government agencies, neighborhood groups, religious groups, senior centers, and health officials (FEMA, 2002b, p. 7). Departments surveyed indicate that partnerships within the community are an important component in the success of their programs. The survey revealed that 41 percent of the departments use community partners for fire safety education and 62 percent use partners for life safety education.

Program evaluation was also identified as an important component of the fire and life safety educational process. Powell (1996a) emphasizes that all too often educational programs are eliminated because they lacked tangible data to prove their positive impact in reducing the risk of fire or injury in the community (p. 2-4). Fire departments surveyed indicated that 64 percent had an evaluation process in place for fire safety education programs and 54 percent provided a form of evaluation for elderly life safety education. A majority of the departments use outreach activity (number of participants reached) and end impact data (number of incidents) as an evaluation tool for both programs.

## Interpretation of Results

The population of elderly residents in the City of Milwaukee, age 65 and older, has decreased slightly over the last decade. However, elderly in the age group 75 and older continues to increase in size. This segment of the population, based on both national and local data, represents the most at risk group in the community. City of Milwaukee fire fatality and accidental injury statistics indicate that the elderly in the City of Milwaukee are at significant risk for fire and accidental death and injury. The elderly population represents a disproportionate percentage of fire fatalities and accidental death and injuries in the city of Milwaukee, and the data from the past decade indicates that this is a trend destined to continue without educational intervention.

Surveys and focused group discussion with the elderly population in the City of Milwaukee contributed greatly to the results of this study. The surveys provided insight into the elderly perception of the risks that they are potentially exposed to as well as the impact of these risks on their lives and their ability to prevent such events from occurring. Survey results indicated that the elderly fully understand the degree of risk they face associated with accidental falls, motor vehicle/pedestrian accidents, and residential fires. The elderly population also indicated via survey that they showed an understanding and appreciation for the impact that these events would have on their lives should they occur. When asked if they felt they could prevent these events from occurring, the responses indicated that there were several things they felt they could do. The results of this portion of the survey indicate that the elderly understand the risks that they face and the implications of such events on their lives. Further, understanding that these events can be prevented, indicates that this population is open to the benefits of fire and life safety education. Conversely, the fact that the elderly rated burn injuries lower than all other "major" risks indicates that education needs to focus on their vulnerability in this area.

The elderly surveys and focused group discussions also provided valuable insight into how this population obtains information and how fire life and life safety educational methodology could be structured to meet their identified needs. The elderly indicated that they preferred to receive this education from fire, police, or health professionals. They verbalized that their preference for educational delivery should utilize lecture, video, television, and newspaper. When surveyed on how they obtain most of their information, they indicated in order, television, newspaper, conversation with friends, books and informational literature, and lastly educational classes. These results would indicate that although educational programs can be an extremely effective approach, the use of television and printed media may also be a valuable education tactic. The elderly also indicated that the venue for the delivery of educational programs is very important to them. They prefer that the education come to them, indicating that that the best location for educational programs is in their own home or in a community room located in their living complex. They stated that educational programs at a distant site would be appealing only if transportation is provided.

It should also be noted that the opportunity to engage the elderly population through the focused group discussion format revealed that this age group enjoys this interactive approach. The elderly were extremely eager to voice their experiences and share their knowledge in the areas of fire and life safety.

The surveys completed by fire departments nation-wide provided valuable insight into current trends in elderly fire and life safety education. The surveys indicate that the majority of departments do provide fire education focused specifically at the elderly population while only half provided life safety education for this same group. This indicates that although the "all risk" education concept for the elderly is growing within the fire service, it has not been completely embraced overall.

The majority of the departments surveyed indicate that they use a nationally developed program or combination of national and local programs to provide elderly education. Results indicate that departments place a high level of confidence in the nationally developed programs and find them to be the most effective means for the delivery of elderly fire and life safety education. The research and development placed into the production of such programs reveals a fire service mentality that it is not necessary to recreate the wheel in regards to this educational methodology.

Departments surveyed indicate that the instructional methodology is very consistent. Most programs are presented in the lecture format utilizing interactive discussion and video. The message delivered focuses on the most popular topics relative to fire safety with an emphasis on those events that place the elderly at significant risk such as cooking, smoking, and electrical safety. Life safety messages evolve around the prevention of falls and general in home safety. Although motor vehicle and pedestrian accidents continue to account for a large percentage of elderly deaths and injury, few departments include messages geared to reducing these events.

Departments indicate that the most popular venue for elderly education includes senior living complexes, private homes, churches, and senior focused community events.

The use of community partners for the implementation of programs has been identified as an important component for any fire and life safety educational program geared to the elderly. The survey results indicate that the majority of departments use community partners for the implementation and delivery of life safety programs while less than half of the departments use such partners for the delivery of fire safety messages. While the fire service has a long history of providing fire safety education and a high level of confidence in their ability to do so, departments have acknowledge the need to involve other community agencies and professionals when it comes to life safety education.

The evaluation of educational programs is the cornerstone for determining program success and the department's ability to reach program objectives. The majority of departments surveyed revealed that an evaluation process was used with a dependence on outreach and end impact data. Outreach and end impact data tend to be the easiest evaluation tool for the fire service to implement, however, this approach leaves a wide gap in determining overall results and educational effectiveness. With the exception of 2 departments, none evaluate programs based on knowledge, behavior, or environmental change, the more technical and time consuming evaluation approach. In addition, none of the department's surveyed used any type of community comparisons to determine program success. Based on the fact that only 64 percent of departments evaluate their fire safety education programs and 54 percent evaluate life safety

programs, implementation of a detailed evaluation process appears to be a significant weakness in the fire-based educational process.

## Implications for the Organization

The research for this paper reveals significant implications for the Milwaukee Fire Department in regards to providing fire and life safety education to the elderly population. Data obtained for this research indicates that the elderly population in the City of Milwaukee, in greater proportion than any other population group, is at significant risk for death or injury due to fire or other accidental event. Based on projections of population growth for this age group both nationally and locally, it can be determined that unless educational measures are put in place to reduce such events, the elderly will continue to disproportionately dominate the statistics in these areas. Surveys of the elderly population in the community reflect a population that understands the risks they face, the impact of those risks, and the ability to prevent them. The elderly population have expressed the need for preventative measures and understands the positive results that education in these areas can produce. The Milwaukee Fire Department is presented with a population that is positioned to benefit from a fire and life safety educational program.

Fire departments that were surveyed have established a roadmap for fire and life safety education that is based on the success of nationally developed curriculums that provide an educational message and methodology to address the death and injury risks that the elderly population faces. The Milwaukee Fire Department has the opportunity to utilize the wealth of resources available to develop and structure an effective elderly fire and life safety educational program. This process involves a community risk reduction assessment of the elderly population, developing intervention strategies and program objectives, identifying program messages and instructional methodology, developing program partnerships, and initiating a program evaluation process.

## RECOMMENDATIONS

To address the fire and life safety risks of the elderly population in the City of Milwaukee, the Milwaukee Fire Department needs to implement a fire and life safety educational program.

**As determined by the results of this study, the following recommendations are made:**

1. To reduce elderly fire and accidental death and injury incidents in the City of Milwaukee, the Milwaukee Fire Department must develop and implement an "all risk" educational program targeted at the growing elderly population. This commitment must include the financial and human resources necessary to effect change through education.

2.      To reduce the number of accidental deaths and injuries to the elderly population in the City of Milwaukee, the Milwaukee Fire Department must focus "all risk" education on fire fatalities and burns, accidental falls, motor vehicle and pedestrian accidents.

3.      To assist in a continuous community risk assessment process and future program evaluation, the Milwaukee Fire Department must initiate a method to accumulate all data relative to elderly fire and accidental death and injury incidents in the City of Milwaukee.

4.      To develop an effective program methodology for the delivery of fire and life safety education to the elderly, the Milwaukee Fire Department must examine nationally developed programs that have a proven track record of success in addressing elderly fire and life safety issues. Programs should be structured around an interactive approach that uses lectures, demonstrations and video.

5.      To effectively reach the elderly population, the Milwaukee Fire Department must establish an educational program format that allows trained educators to interact with the elderly population at the locations where they live and socialize.

6.      To address specific fire and life safety risks in the elderly population and to allow for program evaluation, the Milwaukee Fire Department must develop distinct educational objectives based on a community risk assessment.

7.      To determine program effectiveness and ensure future funding and community support the Milwaukee Fire Department must identify a program evaluation process measuring knowledge, behavior, and environmental change, and outreach activity and end impact data.

8.      To maximize community support and use all available resources, the Milwaukee Fire Department must establish community partnerships in the development and implementation of an elderly fire and life safety program.

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# Appendix A

February 20, 2003

*Dear Sir:*

*Please allow me to introduce myself.  My name is Andrew Smerz and I am a Deputy Chief with the Milwaukee Fire Department currently managing the department's Bureau of Administration. I am presently enrolled in the Executive Fire Officer Program at the National Fire Academy.  As part of my four-year education I am required to complete an applied research project following each course.  The research project must directly relate to an issue concerning the Milwaukee Fire Department.  With the approval of Fire Chief William Wentlandt, I have chosen to research fire and life safety education for the elderly. I have enclosed a survey that is designed to provide me with information about your department's efforts in the area of elderly public education.  I realize that everyone's time is valuable and surveys are not always popular.  Therefore, I have attempted to make the survey short and hopefully very easy to complete.   I very much appreciate your cooperation in my research efforts.  My goal is to have all surveys returned by March 24, 2003.  I have enclosed a self addressed stamped envelope for the return of the survey.  If there are any questions regarding the survey, I can be reached at (414) 286-8944.  Thank you once again, your response is very important to my research.*

*Sincerely,*

*ANDREW G. SMERZ*
*Deputy Chief*
*Milwaukee Fire Department*

## Appendix B
## Fire Departments that Participated in the Research Survey

1. Atlanta, Georgia

2. Baltimore City, Maryland

3. Boston, Massachusetts

4. Chicago, Illinois

5. Cleveland, Ohio

6. Dallas, Texas

7. District of Columbia

8. Houston, Texas

9. Indianapolis, Indiana

10. Kansas City, Missouri

11. Los Angeles

12. Los Angeles County

13. Louisville, Kentucky

14. Madison, Wisconsin

15. Memphis, Tennessee

16. Minneapolis, Minnesota

17. New Orleans, Louisiana

18. Omaha, Nebraska

19. Orlando, Florida

20. Philadelphia, Pennsylvania

21. Phoenix, Arizona

22.     Saint Paul, Minnesota

23.     San Diego, California

24.     San Jose, California

25.     Seattle, Washington

26.     Tempe, Arizona

**Appendix C**
**Elderly Public Education Survey**

Department: _____

Name, title and position of person completing the survey: _____

Phone number of person completing the survey: _____

## ELDERLY FIRE SAFETY EDUCATION

1. Does your department provide fire safety education programs focused specifically on the elderly population?                     Y     N

   If yes please complete questions 2 - 8

2. Did your department
   A. develop your own program?
   B. use a nationally developed program?
   C. use a combination of A and B?

   Name of nationally developed program(s) _____

   _____

3. Please indicate the topics your education program focuses on
   1. _____        4._____
   2. _____        5._____
   3. _____        6._____

4. Who conducts your department's elderly fire safety education programs?
   A. department staff
   B. civilians
   C. public agencies (please name) _____
   D. private agencies (please name) _____

5. Does your department partner with any other organizations or groups to provide elderly fire education?                     Y     N

   If yes please name _____

6. What delivery method does your department use to provide elderly fire education? (pamphlets, lecture, video, public media etc.)

   _____

7.   Does your department have a process to evaluate the effectiveness of your elderly fire safety education program?                                Y        N
     If yes, please describe how the program is evaluated (number of fire deaths, number of fires, number of participants reached, participant tests etc.)

     _____

     _____

8.   Where does your department conduct your elderly fire education programs? (homes, department facility, public buildings etc.)

     _____

## ELDERLY LIFE SAFETY EDUCATION

1.   Does your department provide life safety education programs focused specifically on the elderly population (home safety, fall prevention etc)?        Y        N
     If yes please complete questions 2 - 9

2.   Did your department
     A.  develop your own program?                                Y        N
     B.  use a nationally developed program?                      Y        N
     C.  use a combination of A and B?                            Y        N

     Name of nationally developed program(s)  _____

     _____

3.   Please indicate the topics your elderly life safety education program focuses on
     1. _____        4._____
     2. _____        5._____
     3. _____        6._____

4.   Who conducts your department's elderly life safety education programs?
     A.     department staff
     B.     civilians
     C.     public agencies (please name)  _____
     D.     private agencies (please name) _____

5.   Does your department partner with any other organizations or groups to provide elderly life safety education?                                Y        N
          If yes please name  _____

6.   What delivery method does your department use to provide elderly life safety education? (pamphlets, lecture, video, public media etc.)

     _____

7.        Does your department have a process to evaluate the effectiveness of your elderly life safety education program?            Y     N
If yes, please describe how the program is evaluated (number of incidents of injury, number of participants reached, participant tests etc.)

_____

_____

8.        Where does your department conduct your elderly life safety education programs? (homes, department facility, public buildings etc.)

_____

9.        Does your department combine fire safety and life safety education for the elderly into one program?            Y     N

Thank you for your help with this research.  If you can provide any other materials that describe your department's program(s), I would appreciate receiving those as well.

This survey can also be faxed to the attention of Deputy Chief Andrew Smerz at (414) 286-8996.

**Appendix D**
**Survey**

Please indicate your age group
☐ 55 – 64
☐ 65 – 74
☐ 75 – 85
☐ greater than 85

Please indicate your gender
☐ Male
☐ Female

1.  Please review the list of events below and place an "X" in the box to indicate those events you consider could possibly occur in your life in the next five years.

☐ Earthquake
☐ Flooding
☐ Winter or ice storm
☐ Tornadoes
☐ Residential fire
☐ Plane, train, or bus accident
☐ Terrorist attack
☐ Vehicle accident
☐ Bicycle accident
☐ Pedestrian accident
☐ Serious health problem

☐ Carbon monoxide poisoning
☐ Food poisoning
☐ Water contamination
☐ Injury from falling
☐ Injury from a burn
☐ Firearm injury
☐ Electrical shock
☐ Property crime (burglary theft, etc)
☐ Violent crime (murder, assault, rape etc)

Please return to the list above and of the events that you checked, underline the five events you think are most likely to occur in your life.

2.  Please use the following scale to rate each risk on how it would affect your life if it did happen. Put a number (1 to 4) in front of each risk on the list.

    1 – **No** impact
    2 – **Small** impact
    3 – **Medium** impact
    4 – **Large** impact

_____ Earthquake
_____ Flooding
_____ Winter or ice storm
_____ Tornadoes
_____ Residential fire
_____ Plane, train, or bus accident
_____ Terrorist attack
_____ Vehicle accident
_____ Bicycle accident
_____ Violent crime (murder, assault, rape etc)

_____ Carbon monoxide poisoning
_____ Food poisoning
_____ Water contamination
_____ Injury from falling
_____ Injury from a burn
_____ Firearm injury
_____ Electrical shock
_____ Property crime (burglary theft, etc)
_____ Pedestrian accident
_____ Serious health problem

3.      Please rate each risk in terms of whether you think you could prevent these risks from happening. Put a number (1 to 4) in front of each risk on the list.

> **1** – There is **nothing** I can do to prevent this risk from happening.
> **2** – There are **few** things I can do to prevent this risk from happening.
> **3** – There are **many** things I can do to prevent this risk from happening.
> **4** – There are **so many** things I can do that I can probably prevent this risk from happening through my actions.

| | |
|---|---|
| _____ Earthquake | _____ Carbon monoxide poisoning |
| _____ Flooding | _____ Food poisoning |
| _____ Winter or ice storm | _____ Water contamination |
| _____ Tornadoes | _____ Injury from falling |
| _____ Residential fire | _____ Injury from a burn |
| _____ Plane, train, or bus accident | _____ Firearm injury |
| _____ Terrorist attack | _____ Electrical shock |
| _____ Vehicle accident | _____ Property crime (burglary theft, etc) |
| _____ Bicycle accident | _____ Violent crime (murder, assault, rape etc) |
| _____ Pedestrian accident | _____ Serious health problem |

4.      Please review the list of places below and place an "X" in the box indicating the one place you feel you are most likely to experience an injury.

| | | | |
|---|---|---|---|
| ☐ | In your own home | ☐ | In someone else's home |
| ☐ | In a public building | ☐ | Outdoors |

5.      Please list in order (1 - 6) the means by which you obtain your most information.

| | |
|---|---|
| _____ Television | _____ Informational literature |
| _____ Newspaper | _____ Conversation with friends |
| _____ Books | _____ Educational classes or seminars |

6.      Please review the list below and place an "X" in the box indicating each type of fire that you believe could be life threatening.

| | | | |
|---|---|---|---|
| ☐ | Electrical fire | ☐ | Unattended cigarette fire |
| ☐ | Waste basket fire | ☐ | Stove top fire in a frying pan |

## Apendix E
## Focus Group

**Fire Safety**

1.      What do you think are the greatest fire hazards you encounter in your life?

2.      What are some of the things you do to prevent fires from occurring in your life?
   - Where did you learn about that idea?

3.      Are there things that you currently are not doing, but could do to prevent the occurrence of fire?
   - For the items your are not currently doing, why are you not doing those things?

4.      What are some of the things you should do if a fire occurs in your home?

5.      When was the last time you heard a fire safety message?
   - What was the message?
   - How was the message delivered?

6.      What would be the most effective way to present a fire safety message to you and others like yourself?

7.      Who would be the best people to present a fire safety message?

8.      Where would be the best place to conduct a fire safety education program that would most likely get you to attend?


**Life Safety**

1.      What do you consider to be the greatest life safety hazards (injury hazards) that you face in your life?

2.      For the items listed above, what can be done to prevent these events from occurring?
   - Where did you learn about those ideas?

3.      Are there things that you currently are not doing, but could do to prevent the occurrence of injuries?
   - For the items your are not currently doing, why are you not doing those things?

4.      When was the last time you heard an injury prevention message?
   - What was the message?
   - How was the message delivered?

5.      What would be the most effective way to present an injury prevention message to you and others like yourself?

6.      Who would be the best people to present a fire safety message?

7.      Where would be the best place to conduct a fire safety education program that would most likely get you to attend?
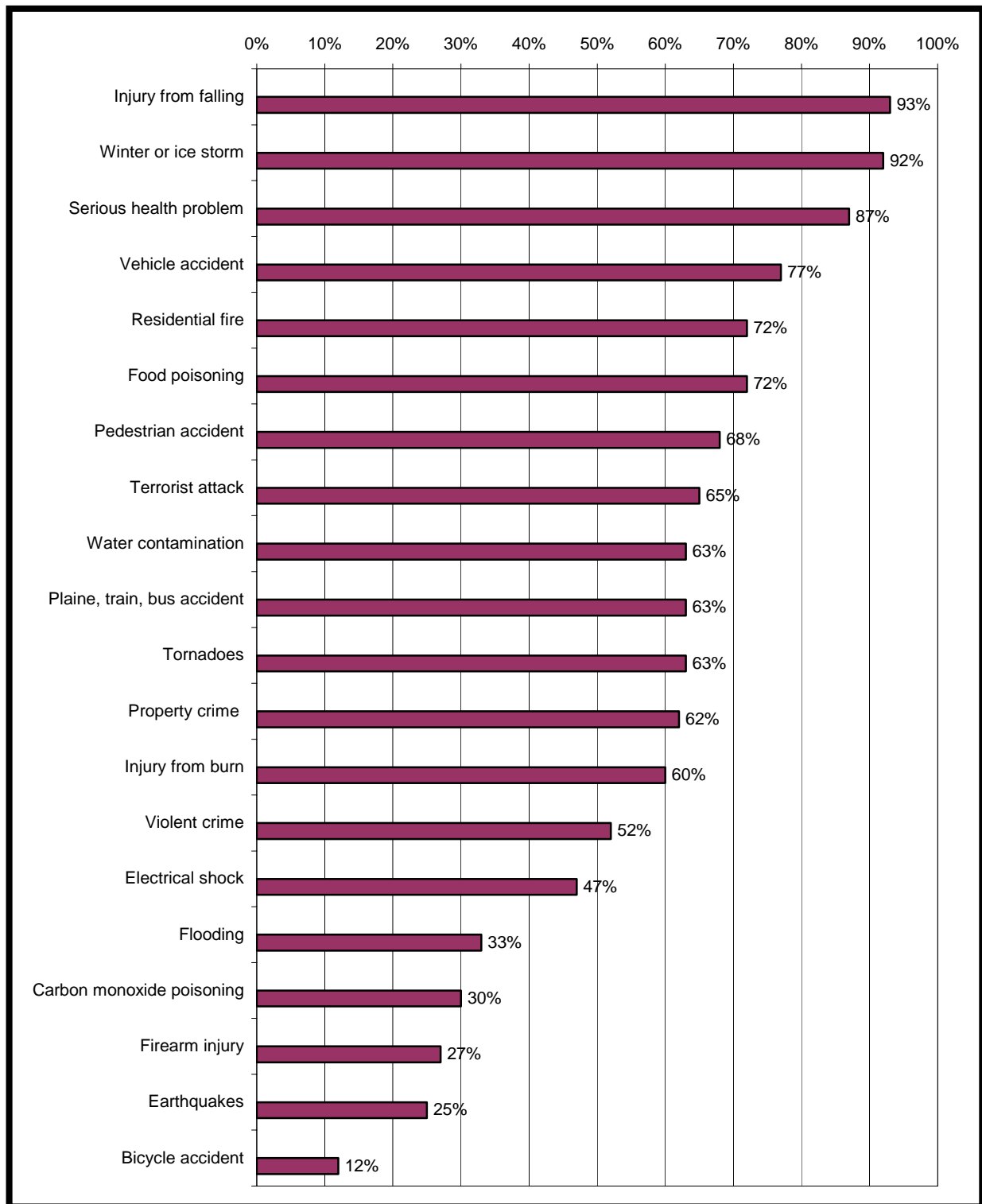
**Appendix F**
**Percentage of Participants Identifying These Risks as Likely to Happen to Them in the Next Five Years**

| Risk | Percentage |
|------|-----------|
| Injury from falling | 93% |
| Winter or ice storm | 92% |
| Serious health problem | 87% |
| Vehicle accident | 77% |
| Residential fire | 72% |
| Food poisoning | 72% |
| Pedestrian accident | 68% |
| Terrorist attack | 65% |
| Water contamination | 63% |
| Plaine, train, bus accident | 63% |
| Tornadoes | 63% |
| Property crime | 62% |
| Injury from burn | 60% |
| Violent crime | 52% |
| Electrical shock | 47% |
| Flooding | 33% |
| Carbon monoxide poisoning | 30% |
| Firearm injury | 27% |
| Earthquakes | 25% |
| Bicycle accident | 12% |

**Appendix G**
**Mean Level of Impact if Participants Were to Experience These Risks**
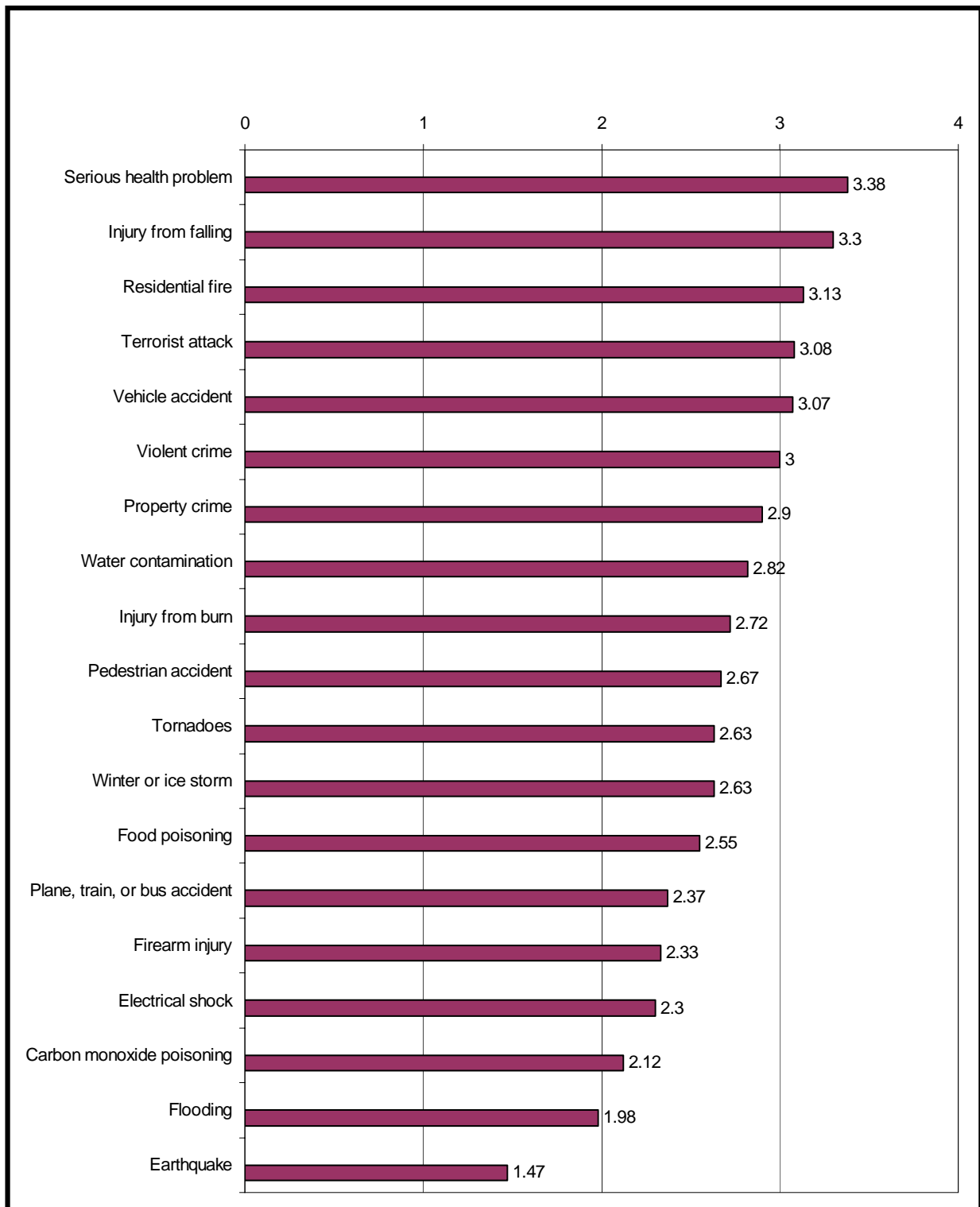
| Risk | Mean |
|------|------|
| Serious health problem | 3.38 |
| Injury from falling | 3.3 |
| Residential fire | 3.13 |
| Terrorist attack | 3.08 |
| Vehicle accident | 3.07 |
| Violent crime | 3 |
| Property crime | 2.9 |
| Water contamination | 2.82 |
| Injury from burn | 2.72 |
| Pedestrian accident | 2.67 |
| Tornadoes | 2.63 |
| Winter or ice storm | 2.63 |
| Food poisoning | 2.55 |
| Plane, train, or bus accident | 2.37 |
| Firearm injury | 2.33 |
| Electrical shock | 2.3 |
| Carbon monoxide poisoning | 2.12 |
| Flooding | 1.98 |
| Earthquake | 1.47 |

**Appendix H**
**Mean Rating of Participant's Ability to Prevent These Risks from Happening**

| Risk | Rating |
|------|--------|
| Injury from falling | 2.65 |
| Serious health problem | 2.47 |
| Residential fire | 2.45 |
| Food poisoning | 2.45 |
| Injury from burn | 2.42 |
| Electrical shock | 2.3 |
| Property crime | 2.25 |
| Pedestrian accident | 2.25 |
| Vehicle accident | 2.12 |
| Carbon monoxide poisoning | 2.07 |
| Violent crime | 1.85 |
| Bicycle accident | 1.83 |
| Firearm injury | 1.83 |
| Water contamination | 1.75 |
| Flooding | 1.3 |
| Winter or ice storm | 1.28 |
| Terrorist attack | 1.23 |
| Plane, train or bus accident | 1.23 |
| Earthquake | 1.13 |
| Tornadoes | 1.1 |